The Efficacy of Yoga as an Adjunctive Therapy to Standard Multidisciplinary Care in the Treatment of Female Patients Presenting with Cognitive Eating Disorder Symptoms

Cassidy Nagle, MMS (c)

Faculty Advisor: Kimberly Erikson MSPAS, PA-C

Department of Medical Science

ARCADIA UNIVERSITY
FOUNDED 1853

Abstract

Eating disorders (EDs) are a worldwide health concern affecting all genders, races, cultures and socioeconomic levels. Current treatment of patients exhibiting cognitive eating disorder symptoms is standard multidisciplinary care (SMDC) involving behavioral therapy, medical management and dietetics.[1] Because these symptoms often persist or relapse despite this treatment, research has begun to explore adjunctive therapies such as yoga for this population. This review explores seven currently available studies in order to analyze the effect of yoga (I) on cognitive eating disorder symptoms (O) in teenage and adult females (P) when added to SMDC compared to symptom reduction with SMDC alone (C). All studies **support the notion that yoga may be a safe and effective addition to SMDC in the treatment of female patients presenting with cognitive eating disorder symptoms** but, considering the weaknesses of the currently available evidence, **more research is necessary** before yoga is added to current treatment regimens.

Introduction

Eating disorders (EDs):

- Affect roughly 10% of females and 3% of males in their lifetime[1]
- Common types and presentations:[3]
  - Anorexia nervosa (AN) – restrictive behavior, fear of weight gain
  - Bulimia nervosa (BN) – binge and purge
  - Binge eating disorder (BED)- excess consumption of food in short time without purging
- The following **cognitive symptoms** have been identified to contribute to all of these pathologic eating behaviors:[1, 3-7]
  - Weight and body image concerns
  - Concurrent anxiety or depression
  - Preoccupation with or emotional connection to food
  - Poor distress tolerance (ability to cope with life's stresses)
  - Distorted ideas of self
  - Lack of mindfulness
- **High recurrence rates of 35-50% despite current treatment[1] → need for adjunctive therapies**
- **YOGA has shown promising positive effects on other (often comorbid) mental health disorders[1,4]**

Current treatment: Standard multidisciplinary care (SMDC)

- Includes medical monitoring, nutritionist involvement, and behavioral therapy[1]
- This paper will evaluate the following question:

For teenage or adult females presenting with cognitive eating disorder symptoms, does the addition of a yoga intervention to standard multidisciplinary care prove to be more effective in reducing symptoms than standard multidisciplinary care alone?

Methods

- Literature search was conducted in November 2018.
- **Databases used:** PubMed, Google Scholar, and the Academic Search Ultimate
- **Searches included:** "yoga AND eating disorders", "yoga AND eating disorders OR anorexia OR bulimia OR binge eating", "yoga AND disordered eating", and more
- **Inclusion criteria:**
  - Must explore yoga' role in improving one or more cognitive ED symptoms
  - Must involve teenage or adult women exhibiting cognitive eating disorder symptoms
  - Only peer-reviewed scholarly works
  - Published within 5 years (applies to initial search only)
- **Exclusion criteria:**
  - Systematic reviews or meta analyses
  - Population studied does not include females with cognitive ED symptoms
  - If article focused on prevention of EDs instead of treatment
- The search was expanded to "within 10 years" and 2 additional randomized controlled trials (RCTs) were found on Google Scholar because they offered higher quality evidence than more recent non-RCTs found.
- P<0.05 and 95% confidence intervals were used for all seven studies in the review.

Results

The seven studies in this review provide supporting evidence that yoga as an adjunctive therapy to standard multidisciplinary care has the potential to further reduce one or many cognitive eating disorder symptoms in teenage and adult women.

➢ 6/7 studies utilized the Eating Disorder Examination Questionnaire to quantify overall amount of cognitive ED symptoms in participants. All but one of these found the addition of yoga to SMDC to result **in statistically significant greater reductions in global EDE-Q scores** compared to scores of those undergoing only SMDC.

➢One cohort study showed the addition of weekly yoga to outpatient treatment to result in a greater reduction of depression, anxiety, and concerns over weight and shape in females with AN, BN, ARFID, or OSFED. A randomized controlled trial (RCT) also demonstrates **a greater reduction in depressive and anxiety symptoms** in yoga participants.[13]

➢ Another RCT found biweekly yoga to result in greater reduction of concerns over restriction and eating in females with BN and EDNOS both at the end of the study and at 6-month follow-up.[9]

➢ A larger RCT in India also used subscales of the EDE-Q to **demonstrate greater reductions in concerns over weight, shape, restriction and eating** in females presenting with cognitive ED symptoms (with or without formal diagnosis yet) that underwent yoga therapy.[11]

➢ A 5-day RCT found the addition of daily yoga prior to dinner in the inpatient treatment setting to result **in greater reductions of negative pre-meal affect and anxiety** with no significant change on post-meal affect.[10] This was the one study to not demonstrate statistically significant reductions in global EDE-Q scores, but researchers argue it may not have been long enough to show effect.[10]

➢ An RCT involving BN and BED patients found weekly adjunctive yoga and home practice to result in **greater reductions of binge episodes and emotional processing issues and significant improvements in self-compassion and mindfulness**.[14]

➢Another RCT chose to focus on only females with binge eating disorder (BED) and found weekly group yoga with the encouragement of home practice to result in **greater reductions of binge eating scores and increases in general physical activity levels outside of yoga**.[12] This was the only study to find a statistically significant decrease in yoga participants' BMI, but it must be noted all subjects started with a BMI >25.[12]

➢All **six of the other studies found no statistically significant change in yoga participants' BMI across all ED types.**

Table 1: Comparison of Study Designs

Study	Design	Total N	Demographics/ Diagnosis	Setting	Intervention	Outcomes
Hall et al (2016)[8]	Cohort	N=20 9 dropout	100% Female Age 14-18 AN,BN, ARFID, EDNOS	Outpatient, US	1 60-90 min Hatha yoga weekly x 12 weeks	Vitals, BMI, SOM, STAI, EAT-26, EDE-Q
Karlsen et al (2018)[9]	RCT	N=38 11 dropout	100% Female Age 18+ BN, EDNOS	Community-based, Norway	2 90 min yoga weekly x 11 weeks	EDE-Q, EDI-2
Pacanowski et al (2017)[10]	RCT	N=38 2 dropout	97.3% Female 2.7% Male AN, BN, EDNOS	Inpatient, US	1 50 min yoga daily before dinner x 5 days	EDE-Q, EAQ, PANAS, HAS
Rawat R, Pandya C (2016)[11]	RCT	N=120 40 dropout	100% Female Age 11-19 Had to get qualifying symptom score on EDE-Q	Community-based, India	1 28 min yoga weekly x 12 weeks	EDE-Q
McIver et al (2009)[12]	RCT	N=71 21 dropout	100% Female Age 23-63 BED (BES score>20)	Community-based, Austria	1 60 min group yoga weekly x 12 weeks plus 30 min yoga CD for home 5 days/wk	BMI, hip/waist, BES, IPAQ
Carei et al (2010)[13]	RCT	N=54 4 dropout	92.6% Female 7.4% Male Age 11-21 AN, BN, EDNOS	Outpatient, US	2 60 min 1:1 yoga weekly x 8 weeks	BMI, EDE-Q, BDI, STAI, FPQ
Brennan MA (2015)[14]	RCT	N=72 19 dropout	100% Female Age 18-59 BN, BED	Community-based, Canada	1 90 min Kripalu group yoga x 8 weeks plus 30 min online yoga for home	ATSPPH-SF, SCS-SF, DERS, EDE-Q, FSCRS, BD, TB, TMS, yoga log

Discussion

5 studies found statistically significant improvements in global EDE-Q scores after a yoga intervention was added to SMDC.

Adjunctive yoga was also found to result in **statistically significant improvements in:**

Weight and shape concerns, anxiety, depression, food preoccupation, effect on pre-meal affect, binge eating severity and ideas of self.

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Strengths of the studies:

•6/7 studies are randomized controlled trials
•6/7 studies used statistics to ensure groups are baseline were without statistically significant differences
•Reputable assessments with high validity and reliability

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Weaknesses of the studies:

•Small sample sizes
•High attrition rates
•Relatively short duration and follow-up (if applicable)
•Selection bias
•Lack of blinding
•Each article studied a slightly different population,, utilized a different yoga practice, and offered a slightly different variation of SMDC at baseline (or the details of which were not specified)

Conclusion

•The seven articles in this review provide **promising results** that should **encourage further research** on the addition of yoga to standard multidisciplinary care in the treatment of female patients presenting with cognitive eating disorder symptoms.

•While **all of the articles demonstrated yoga's ability to aid in cognitive symptom reduction** compared to standard multidisciplinary care alone, **there is still not enough quality evidence to definitively declare yoga an effective adjunctive therapy, especially long-term.**

•Clinically, if providers begin to offer an adjunctive yoga therapy to this relatively broad population of 'females with cognitive eating disorder symptoms', **additional studies will need to determine the appropriate yoga prescription (including type, location, frequency, and intensity) for each type of eating disorder presentation** as each will have significantly different goals in treatment. .

•As a whole, the seven studies showed yoga to be a **safe practice in ALL types of eating disorders.** There was no statistically significant change in patients' BMI except in the McIver et al study of only binge eating disorder patients with an initial BMI>25.

•All participants in the study were deemed medically stable enough prior to undergoing the yoga practice, and all of the group yoga or 1:1 yoga interventions were supervised and regulated. Both of these measures helped to reduce the risk of any adverse events or over-exercising and should also be utilized in clinical practice.

Key for Table 1: ED=eating disorder, AN=Anorexia nervosa, BN= Bulimia nervosa, ARFID= Avoidant/restrictive food intake disorder, EDNOS= eating disorder not otherwise specified, RCT= randomized controlled trial, BMI=body mass index, SOM=State of Mind Questionnaire, STAI=State Trait Anxiety Inventory, EAT-26=Eating Attitudes Test, EDE-Q=Eating Disorder Examination Questionnaire, EDI-2=Eating Disorders Inventory, EAQ=Emotional Avoidance Questionnaire, PANAS=Positive and Negative Affect Schedule, HAS=Hamilton Anxiety Scale, FPQ=Food Preoccupation Questionnaire, SF=Attitudes Towards Seeking Professional Psychological Help, SCS=CF=Self Compassion Scale Short Form, FSCRS=Form of Self=Criticizing/Attacking and Self=Reassuring Scale, DERS=Difficulties in Emotional Regulation Scale, TMS=Toronto Mindfulness Scale, BD=Binge Days, TB=Times Binge Eating, BES=Binge Eating Scale, IPAQ=International Physical Activity Questionnaire